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lower races. For this reason, then, peculiarities of races become obliterated in time. — *The Academy.*

MICROSCOPY.

A FIELD-STAGE FOR CLINICAL MICROSCOPES.—Dr. R. H. Ward called attention at the Dubuque meeting of the American Association, to a contrivance by which he is able to employ in field work the ordinary form of clinical microscopes. Such microscopes are but little available for opaque objects, the small opening sometimes made through the tube just above the stage being objectionable in respect to focussing and being nearly useless for illuminating purposes by ordinary daylight. The new field-stage is a perforated brass stage-plate occupying the position of the object and bearing a contrivance by which the object is carried at the distance of about an inch lower down. In the instrument shown to the Association, which was home-made and could be made by any one in a few moments, a heavy brass wire was carried down from the brass stage-plate, bent so as to form a rectangular frame on which the object-slide or compressor could rest, and then bent back to the stage-plate again. It was attached to the stage-plate by being bent at right angles and soldered along the sides of the plate to its under surface. The object was held upon this accessory stage by slender wire springs also soldered fast. With this new stage the clinical microscope becomes available for low powers and opaque objects.

PIGOTT'S "SEARCHER" IN THE BINOCULAR.—Dr. John Barker exhibited to the Dublin microscopical club a one-inch objective employed as a "searcher," as suggested by Dr. Pigott. His object was to propose its application to the binocular microscope by inserting a one-inch objective in each body, and thus attain in connection with stereoscopic vision, the high amplifying power of such arrangements.

UNDER-CORRECTED OBJECTIVES.— Objectives considerably under-corrected as to color are now furnished by a variety of leading makers and are generally preferred by critical microscopists. They not only work better for photography and with monochromatic illumination, but they excel for ordinary work those lenses in which the corrections for spherical aberration are sacrificed for the sake of a more perfect achromatism. Powell and Lealand, Tolles and Gundlach are prominent examples of those makers who seem to have adopted this policy of under-correction for color.

Microscopy in New Jersey.—Mr. E. Gundlach, the celebrated proprietor of the Optical Institute at Charlottenburg, Prussia, has removed his residence to this country. He is now living at Hackensack, New Jersey, where he proposes to devote his attention exclusively to the manufacture of first-class objectives.

Determination of Powers in the Compound Microscope.—This subject was discussed at a meeting of the Queckett club, and a variety of appliances recommended for the purpose. The simplest plan, and one familiarly employed by many microscopists, was advised by Mr. S. J. McIntyre who ascertained the apparent size of the field of view, and reduced it to thousandths of an inch, and divided that number by the number of divisions of a stage micrometer (ruled to thousandths of an inch), included in the field of view. Thus if the apparent field of view with a certain ocular is five inches ($\frac{5000}{1000}$) and with a certain objective it includes twenty-five divisions of a stage micrometer ruled to thousandths, then the power of the microscope as thus arranged will be $\frac{5000}{25}=200$. With another objective it may include four divisions, and the power will be $\frac{5000}{4}=1250$. This plan is sufficiently accurate for practical purposes, and is, on the whole, the easiest method in use.

Sections of Insects.—Mr. Henry N. Moseley advises to harden the insects by immersion for about a week in absolute alcohol. They are then, or any time afterward, to be embedded in a mixture of sweet oil and wax of suitable hardness, which he prefers to paraffin, and sections are to be cut with a sharp, thin edged razor wetted with absolute alcohol. The sections are to be immediately floated off on to slides, stained with carmine, treated with absolute alcohol and then with oil of cloves, and mounted in Canada balsam or dammar varnish in the usual manner. Extremely beautiful specimens are thus prepared, showing the general anatomy of the insect. Instructive objects are obtained by sections passing through the eyes, especially if carried at the same time through the cephalic ganglia. The eyes of the mollusca, leeches, etc., may be similarly prepared.

Staining Tissues.—Dr. R. L. Maddox has been studying the tissues of the frog's tadpole's tail, with special reference to the distribution of the nerves, and relates his method of preparing the tissues in the "Monthly Microscopical Journal." Beautiful results were obtained by placing the tadpoles for about five minutes in a mixture of three drams of chromic acid solution (one-fourth per cent.) and twenty drops of sweet spirits of nitre; then washing repeatedly in pure water, immersing for about three minutes in ammoniated water (four drops strong liquor ammonica to three drams of water), washing off the epithelium in pure water with a camel's hair pencil and rewashing repeatedly in pure water; then staining for about five minutes in tincture of logwood diluted with pure water to a sherry color, or in a purple aniline solution, and finally mounted in a nearly saturated solution of acetate of potash slightly acidulated with acetic acid. After staining with logwood an improved result was obtained by washing in the usual iron developer with acetic acid employed for developing photographic negatives. Glycerine was tried as the mounting medium, but seemed inferior to the acetate of potash.

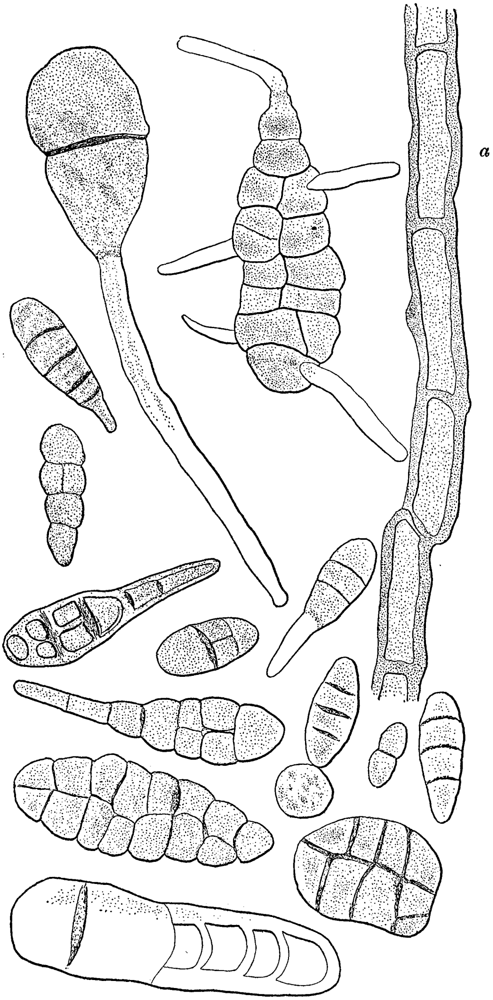
PREPARING PALATES OF MOLLUSKS.—The plan of preparing these palates by boiling in *liquor potassæ*, instead of by dissection, proposed by Mr. Hennah and published eight years ago in the "Intellectual Observer" has recently been inadvertently claimed as a novel American idea.

MOUNTING ENTOMOSTRACA.—Mr. O. S. Westcott, after experimenting with various substances, has concluded that a carbolic acid solution, exceedingly dilute is the best mounting medium for the preservation of these minute animals.

THE HORSE DISEASE.—I have recently made a series of microscopical examinations of the matter from the nostril of a horse suffering with the epizootic influenza now so generally prevailing. A power of seven hundred, with Beck's $\frac{1}{5}$ inch objective, was used in making the observations, and in preparing the accompanying drawings. The great mass of the discharge consisted of mucous and pus corpuscles, with many epithelial cells: but I find therein the spores of three species of cryptogamous plants. The spores are all of a brown color, and occur to the extent of thousands in a single drop. One kind, figure 26, are supposed to be spores of *Urceolaria scruposa* a species of lichen: these were in every stage of development, there being hundreds of the fragments of the stem

(Fig. 26, *a*), in a drop. The second kind (Fig. 27) were echinulate spores, probably of some species of *Aspergillus;* and they, as well as the others, gave evidence of propagation and growth.

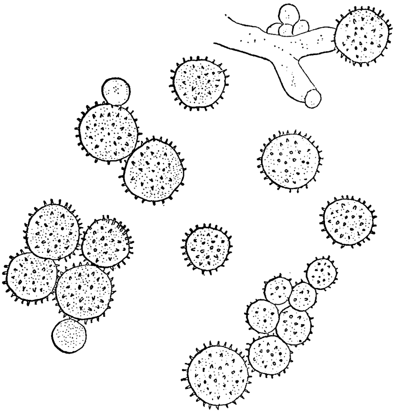
Fig. 26.



× 700.

The third kind (Fig. 29) were smooth, globular spores, species unknown. A few confervoid filaments (Fig. 28) were present; and also some other organized forms, but not in sufficient number to be worthy of remark. Sometimes one of the spores divides into several cells and sends forth a shoot from each division, a number of sprouts being seen growing from one spore in different directions, giving visible evidence of vegetal growth taking place.

Fig. 27.



× 700.

Fig. 28.

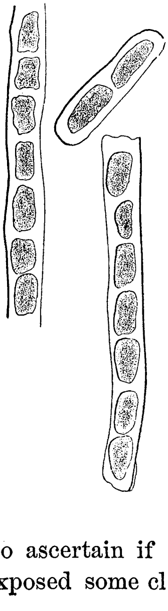
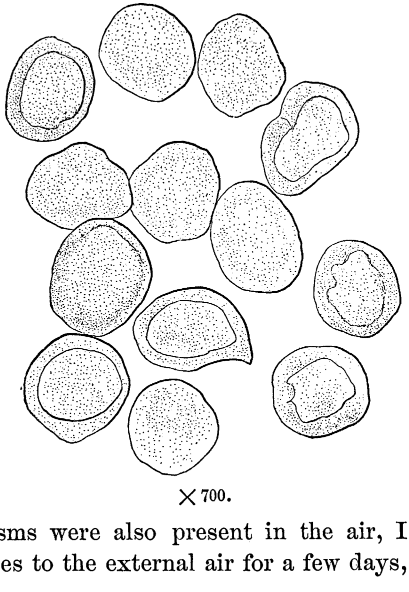


Fig. 29.



× 700.

To ascertain if these organisms were also present in the air, I exposed some clear glass slides to the external air for a few days, and on examination with the microscope had the satisfaction of finding many of them. It seems to be proved then that the spores are floating freely in the atmosphere, and are inhaled into the air passages. The heat of the animal and the moisture of the mucous surfaces favor their germination and growth; and it seems to me possible that the epidemic catarrhal horse disease, and similar difficulties of man, may be caused by these vegetating spores, the greater or less prevalence of this class of diseases being governed by the relative numbers of the germs in air at different seasons, some seasons being more favorable to their development than others.—G. W. MOREHOUSE, *Wayland, New York.*

ORGANISMS IN CHICAGO DRINKING WATER.—Mr. H. H. Babcock discusses this subject in a paper read at the Dubuque meeting of the American Association. His former suspicions are confirmed, that these forms are not at home in the southern end of the Lake, but are brought down from the north by a surface current along the western side of the Lake. The existence of such a current he finds further proved by the vegetation upon the shores, as he observed at least eleven species of plants established in isolated and evidently accidental positions on the shores near or below Chicago, but which belong at the northern end of the Lake or in the region of the sources of its water.

PINE POLLEN IN LAKE MICHIGAN.—At the Dubuque meeting of the American Association, Dr. R. H. Ward made a report on a specimen of viscid-looking water from Lake Michigan, near Racine. The water of the lake was similarly thickened for miles and was generally believed by the neighboring residents to be of an infusorial character. It contained no infusoria worth speaking of; but was almost filled with pine pollen which was interesting from its enormous quantity, and from the fact that its source could not have been near by, but must have been in the pine forests far to the north, the pollen being brought down by the southerly current along the western shore of the Lake.

NOTES.

AT a meeting of the California Academy of Sciences held October 7, 1872, Mr. W. H. Dall presented a portion of the husk and inner shell of a cocoanut picked up on the north side of the Island